

I claim:

1. A method of drilling a directional or horizontal wellbore in a hydrocarbon formation, comprising the steps of:

providing a concentric drill string having an inner pipe, said inner pipe having an inside wall and an outside wall and situated within an outer pipe having an inside wall and an outside wall, said outside wall of said inner pipe and said inside wall of said outer pipe defining an annulus between the pipes;

connecting a bottomhole assembly comprising a directional drilling means to the concentric drill string; and

delivering drilling medium through one of said annulus or inner pipe for operating the directional drilling means to form said directional or horizontal wellbore and removing exhaust drilling medium by extracting said exhaust drilling medium through said other of said annulus or inner pipe.

2. A method of drilling a directional or horizontal wellbore in a hydrocarbon formation, comprising the steps of:

providing a concentric drill string having an inner pipe, said inner pipe having an inside wall and an outside wall and situated within an outer pipe having an inside wall and an outside wall, said outside wall of said inner pipe and said inside wall of said outer pipe defining an annulus between the pipes;

connecting a bottomhole assembly, said bottomhole assembly comprising a directional drilling means and one or more tools selected from the group consisting of a downhole data collection and transmission means, a shock sub, a drill collar and an interchange means, to the concentric drill string; and

delivering drilling medium through one of said annulus or inner pipe for operating the directional drilling means to form said directional or horizontal wellbore and removing exhaust drilling medium by extracting said exhaust drilling medium through said other of said annulus or inner pipe.

3. The method of claim 1 or 2 wherein the drilling medium is delivered through

the annulus and the exhaust drilling medium is extracted through the inner tube.

4. The method of claim 1 or 2 wherein the drilling medium is delivered through the inner tube and exhaust drilling medium is extracted through the annulus.

5. The method of claim 1 or 2 wherein drilling cuttings are extracted together with the exhaust drilling medium.

6. The method of claim 1 or 2 wherein drilling cuttings and hydrocarbons are extracted together with the exhaust drilling medium.

7. The method of claim 1 or 2 wherein said directional drilling means is a reverse circulating directional drilling means.

8. The method of claim 1 or 2, said bottomhole assembly further comprising a downhole flow control means positioned at or near the directional drilling means, said method further comprising the step of preventing a flow of hydrocarbons from the inner pipe or the annulus or both to the surface of the wellbore by operation of said downhole flow control means.

9. The method of claim 1 or 2 further comprising the step of providing a surface flow control means positioned at or near the surface of the wellbore for preventing flow of hydrocarbons from a space between the outside wall of the outer pipe and a wall of the wellbore.

10. The method of claim 9, said surface flow control means further comprising a discharging means, said method further comprising the step of removing said exhaust drilling medium and said drilling cuttings through said discharging means from said wellbore.

11. The method of claim 10 wherein said discharging means further comprises a flare means for flaring hydrocarbons produced from the wellbore.

12. The method of claim 1 or 2 wherein said drilling medium comprises air and said directional drilling means comprises a reciprocating air hammer, a drill bit and a bent sub or housing.

13. The method of claim 1 or 2 wherein said drilling medium comprises air and said directional drilling means comprises a rotary drill bit using a rotary table or top drive drilling system and a bent sub or housing.

14. The method of claim 1 or 2 wherein said drilling medium comprises air and said directional drilling means comprises a drill bit, a steerable downhole air motor and a bent sub or housing.

15. The method of claim 14 wherein said steerable downhole air motor is a reverse circulating steerable downhole air motor.

16. The method of claim 1 or 2 wherein said drilling medium comprises drilling mud and said directional drilling means comprises a drill bit, a mud motor and a bent sub or housing.

17. The method of claim 16 wherein said mud motor is a reverse circulating mud motor.

18. The method of claim 12 wherein said reciprocating air hammer is a reverse circulating reciprocating air hammer.

19. The method of claim 1 or 2 wherein said drilling medium is selected from the group comprising drilling mud, drilling fluid and a mixture of drilling fluid and gas and said directional drilling means comprises a drill bit, a rotary table or top drive drilling system and a bent sub or housing.

20. The method of claim 1 or 2, said concentric drill string further comprising a venturi, said method further comprising the step of accelerating said exhaust drilling medium through said venturi so as to facilitate removal of said exhaust drilling

medium from the concentric drill string.

21. The method of claim 1 or 2 further comprising the step of providing a shroud means positioned between the outside wall of the outer pipe and a wall of the wellbore for preventing release of exhaust drilling medium into the hydrocarbon formation.

22. The method of claim 1 or 2 further comprising the step of providing a suction type compressor means for extracting said exhaust drilling medium through said annulus or inner pipe.

23. The method of claim 2 wherein said downhole data collection and transmission means comprises a measurement-while-drilling tool or a logging-while-drilling tool or both.

24. The method of claim 1 further comprising the step of providing an interchange means for directing said extracted drilling medium through said annulus or inner pipe.

25. An apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation, comprising:

- a concentric drill string having an inner pipe, said inner pipe having an inside wall and an outside wall and situated within an outer pipe having an inside wall and an outside wall, said outside wall of said inner pipe and said inside wall of said outer pipe defining an annulus between the pipes;
- a bottomhole assembly comprising a directional drilling means operably connected to the concentric drill string; and
- a drilling medium delivery means for delivering drilling medium through one of said annulus or inner pipe for operating the directional drilling means to form said directional or horizontal wellbore and removing exhaust drilling medium by extracting said exhaust drilling medium through said other of said annulus or inner pipe.

26. The apparatus of claim 25 wherein said bottomhole assembly further comprising a downhole flow control means positioned at or near the directional drilling means for preventing flow of hydrocarbons from the inner pipe or the annulus or both to the surface.

27. The apparatus of claim 25 wherein said bottomhole assembly further comprises one or more tools selected from the group consisting of a downhole data collection and transmission means, a shock sub, a drill collar, a interchange means for directing said exhaust drilling medium through said annulus or inner pipe, and a downhole flow control means.

28. The apparatus of claim 27 wherein said downhole data collection and transmission means comprises a measurement-while-drilling tool or a logging-while-drilling tool or both.

29. The apparatus of claim 25 further comprising a surface flow control means positioned at or near the surface of the wellbore for preventing flow of hydrocarbons from a space between the outside wall of the outer pipe and a wall of the wellbore.

30. The apparatus of claim 29 further comprising a discharging means attached to said surface flow control means for discharging said exhaust drilling medium and said drilling cuttings from the wellbore.

31. The apparatus of claim 30 further comprising a flare means attached to said discharging means for flaring hydrocarbons produced from the wellbore.

32. The apparatus of claim 25 wherein said directional drilling means is a reverse circulating directional drilling means.

33. The apparatus of claim 25 wherein drilling medium comprises air and directional drilling means comprises a reciprocating air hammer, a drill bit and a bent sub or housing.

34. The apparatus of claim 33 wherein said reciprocating air hammer is a reverse circulating reciprocating air hammer.

35. The apparatus of claim 25 wherein drilling medium comprises air and directional drilling means comprises a rotary drill bit with a rotary table or top drive system and a bent sub or housing.

36. The apparatus of claim 25 wherein said drilling medium comprises air and said directional drilling means comprises a drill bit, a steerable downhole air motor and a bent sub or housing.

37. The apparatus of claim 36 wherein said steerable downhole air motor is a reverse circulating steerable downhole air motor.

38. The apparatus of claim 25 wherein said drilling medium comprises drilling mud and said directional drilling means comprises a drill bit, a downhole mud motor and a bent sub or housing.

39. The apparatus of claim 38 wherein said downhole mud motor is a reverse circulating downhole mud motor.

40. The apparatus of claim 25 wherein drilling medium is selected from the group comprising drilling mud, drilling fluid and a mixture of drilling fluid and gas and said directional drilling means comprises a drill bit, a rotary table or top drive system and a bent sub or housing.

41. The apparatus of claim 25, wherein the concentric drill string further comprising a venturi for accelerating said exhaust drilling medium so as to facilitate removal of said exhaust drilling medium from the concentric drill string.

42. The apparatus of claim 25 further comprising a shroud means positioned between the outside wall of the outer pipe and a wall of the wellbore for preventing release of exhaust drilling medium outside the concentric drill pipe and into the

formation.

43. The apparatus of claim 25 further comprising a suction type compressor means positioned at or near the top of the wellbore for extracting said exhaust drilling medium through said annulus or inner pipe.